

Fw: San Juan Benthic Tests

Cortes, Javier SAJ

to:

Mark Reiss

03/16/2011 05:17 PM

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History: This message has been replied to.

Fyi

Javier Cortes

9046138247

Message sent via my BlackBerry Wireless Device

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**From:** Terence Cake <TCake@anamarinc.com>

**To:** Cortes, Javier SAJ

**Cc:** pberman@anamarinc.com <pberman@anamarinc.com>; 'Nadia Lombardero' <Nlombardero@anamarinc.com>

**Sent:** Wed Mar 16 11:04:57 2011

**Subject:** RE: San Juan Benthic Tests

Javier-

Here are the draft statistical analysis that should have been attached to my previous email.

TC



Analysis of Survival Data for San Juan Harbor vs. SJH10 REFERENCE  
Means and Standard Errors

1

----- Test=Amphipod -----

Treatment	No. Reps	Mean Survival	SE Survival	Standard Deviation	CV
SJH10 A-COMP	5	0.94	0.018708	0.041833	4.45032
SJH10 B-COMP	5	0.97	0.012247	0.027386	2.82331
SJH10 REFERENCE	5	0.94	0.024495	0.054772	5.82684
SJH11 PS-COMP	5	0.88	0.037417	0.083666	9.50750

----- Test=Mysid -----

Treatment	No. Reps	Mean Survival	SE Survival	Standard Deviation	CV
SJH10 A-COMP	5	0.89	0.024495	0.054772	6.15419
SJH10 B-COMP	5	0.92	0.012247	0.027386	2.97675
SJH10 REFERENCE	5	0.94	0.036742	0.082158	8.74025
SJH11 PS-COMP	5	0.83	0.033912	0.075829	9.13599

Analysis of Survival Data for San Juan Harbor vs. SJH10 REFERENCE  
Shapiro-Wilks Test for Normality

2

----- Test=Amphipod -----

Obs	S-W Survival W	Prob <W for Survival	S-W Arcsine W	Prob <W for Arcsine
1	0.91000	0.063737	0.89496	0.033211

----- Test=Mysid -----

Obs	S-W Survival W	Prob <W for Survival	S-W Arcsine W	Prob <W for Arcsine
2	0.83388	.00289604	0.93857	0.22530

Analysis of Survival Data for San Juan Harbor vs. SJH10 REFERENCE  
 Levene's Test for Equality of Variance  
 Untransformed Survival

3

Obs	Test	_NAME_	_SOURCE_	_TYPE_	DF	SS	F	PROB
1	Amphipod	abssurv	ERROR	ERROR	16	0.01000	.	.
2	Amphipod	abssurv	Treatment	SS1	3	0.00472	2.51733	0.09501
3	Amphipod	abssurv	Treatment	SS3	3	0.00472	2.51733	0.09501
4	Mysid	abssurv	ERROR	ERROR	16	0.02644	.	.
5	Mysid	abssurv	Treatment	SS1	3	0.00328	0.66162	0.58759
6	Mysid	abssurv	Treatment	SS3	3	0.00328	0.66162	0.58759

Analysis of Survival Data for San Juan Harbor vs. SJH10 REFERENCE  
 Levene's Test for Equality of Variance  
 Arcsine Transformed Survival

Obs	Test	_NAME_	_SOURCE_	_TYPE_	DF	SS	F	PROB
1	Amphipod	absasrv	ERROR	ERROR	16	0.054315	.	.
2	Amphipod	absasrv	Treatment	SS1	3	0.013118	1.28813	0.31244
3	Amphipod	absasrv	Treatment	SS3	3	0.013118	1.28813	0.31244
4	Mysid	absasrv	ERROR	ERROR	16	0.073543	.	.
5	Mysid	absasrv	Treatment	SS1	3	0.032447	2.35308	0.11063
6	Mysid	absasrv	Treatment	SS3	3	0.032447	2.35308	0.11063

Analysis of Survival Data for San Juan Harbor vs. SJH10 REFERENCE  
ANOVA and Comparison of Means  
Untransformed Survival

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----- Test=Amphipod -----

The GLM Procedure

Class Level Information

Class

Levels

Values

Treatment

4

SJH10 A-COMP SJH10 B-COMP SJH10 REFERENCE SJH11 PS-COMP

Number of Observations Read	20
Number of Observations Used	20

## Analysis of Survival Data for San Juan Harbor vs. SJH10 REFERENCE

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ANOVA and Comparison of Means  
Untransformed Survival

----- Test=Amphipod -----

## The GLM Procedure

Dependent Variable: surv

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	3	0.02137500	0.00712500	2.28	0.1185
Error	16	0.05000000	0.00312500		
Corrected Total	19	0.07137500			

R-Square	Coeff Var	Root MSE	surv Mean
0.299475	5.994820	0.055902	0.932500

Source	DF	Type I SS	Mean Square	F Value	Pr > F
Treatment	3	0.02137500	0.00712500	2.28	0.1185

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Treatment	3	0.02137500	0.00712500	2.28	0.1185

Analysis of Survival Data for San Juan Harbor vs. SJH10 REFERENCE  
ANOVA and Comparison of Means  
Untransformed Survival

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----- Test=Amphipod -----

The GLM Procedure

Dunnett's One-tailed t Tests for surv

NOTE: This test controls the Type I experimentwise error for comparisons of all treatments against a control.

Alpha	0.05
Error Degrees of Freedom	16
Error Mean Square	0.003125
Critical Value of Dunnett's t	2.22712
Minimum Significant Difference	0.0787

Comparisons significant at the 0.05 level are indicated by \*\*\*.

Treatment Comparison		Difference		
		Between Means	Simultaneous Confidence Limits	95%
SJH10 B-COMP	- SJH10 REFERENCE	0.03000	-Infinity	0.10874
SJH10 A-COMP	- SJH10 REFERENCE	0.00000	-Infinity	0.07874
SJH11 PS-COMP	- SJH10 REFERENCE	-0.06000	-Infinity	0.01874

ANOVA and Comparison of Means  
Untransformed Survival

----- Test=Mysid -----

The GLM Procedure

Class Level Information

Class

Levels

Values

Treatment

4

SJH10 A-COMP SJH10 B-COMP SJH10 REFERENCE SJH11 PS-COMP

Number of Observations Read	20
Number of Observations Used	20

Analysis of Survival Data for San Juan Harbor vs. SJH10 REFERENCE  
 ANOVA and Comparison of Means  
 Untransformed Survival

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----- Test=Mysid -----

The GLM Procedure

Dependent Variable: surv

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	3	0.03450000	0.01150000	2.83	0.0715
Error	16	0.06500000	0.00406250		
Corrected Total	19	0.09950000			

R-Square	Coeff Var	Root MSE	surv Mean
0.346734	7.121536	0.063738	0.895000

Source	DF	Type I SS	Mean Square	F Value	Pr > F
Treatment	3	0.03450000	0.01150000	2.83	0.0715

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Treatment	3	0.03450000	0.01150000	2.83	0.0715

Analysis of Survival Data for San Juan Harbor vs. SJH10 REFERENCE  
ANOVA and Comparison of Means  
Untransformed Survival

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----- Test=Mysid -----

The GLM Procedure

Dunnett's One-tailed t Tests for surv

NOTE: This test controls the Type I experimentwise error for comparisons of all treatments against a control.

Alpha	0.05
Error Degrees of Freedom	16
Error Mean Square	0.004062
Critical Value of Dunnett's t	2.22712
Minimum Significant Difference	0.0898

Comparisons significant at the 0.05 level are indicated by \*\*\*.

Treatment Comparison		Difference		
		Between Means	Simultaneous 95% Confidence Limits	
SJH10 B-COMP	- SJH10 REFERENCE	-0.02000	-Infinity	0.06978
SJH10 A-COMP	- SJH10 REFERENCE	-0.05000	-Infinity	0.03978
SJH11 PS-COMP	- SJH10 REFERENCE	-0.11000	-Infinity	-0.02022 ***

Analysis of Survival Data for San Juan Harbor vs. SJH10 REFERENCE  
ANOVA and Comparison of Means  
Arcsine Transformed Survival

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----- Test=Amphipod -----

The GLM Procedure

Class Level Information

Class

Levels

Values

Treatment

4

SJH10 A-COMP SJH10 B-COMP SJH10 REFERENCE SJH11 PS-COMP

Number of Observations Read	20
Number of Observations Used	20

## Analysis of Survival Data for San Juan Harbor vs. SJH10 REFERENCE

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ANOVA and Comparison of Means

Arcsine Transformed Survival

----- Test=Amphipod -----

## The GLM Procedure

Dependent Variable: arcsurv

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	3	0.11004001	0.03668000	1.85	0.1796
Error	16	0.31799493	0.01987468		
Corrected Total	19	0.42803494			

R-Square	Coeff Var	Root MSE	arcsurv Mean
0.257082	10.44838	0.140978	1.349277

Source	DF	Type I SS	Mean Square	F Value	Pr > F
Treatment	3	0.11004001	0.03668000	1.85	0.1796

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Treatment	3	0.11004001	0.03668000	1.85	0.1796

Analysis of Survival Data for San Juan Harbor vs. SJH10 REFERENCE  
ANOVA and Comparison of Means  
Arcsine Transformed Survival

13

----- Test=Amphipod -----

The GLM Procedure

Dunnett's One-tailed t Tests for arcsurv

NOTE: This test controls the Type I experimentwise error for comparisons of all treatments against a control.

Alpha	0.05
Error Degrees of Freedom	16
Error Mean Square	0.019875
Critical Value of Dunnett's t	2.22712
Minimum Significant Difference	0.1986

Comparisons significant at the 0.05 level are indicated by \*\*\*.

Treatment Comparison	Difference Between Means	Simultaneous 95% Confidence Limits
SJH10 B-COMP - SJH10 REFERENCE	0.05774	-Infinity 0.25632
SJH10 A-COMP - SJH10 REFERENCE	-0.02586	-Infinity 0.17272
SJH11 PS-COMP - SJH10 REFERENCE	-0.14576	-Infinity 0.05281

Analysis of Survival Data for San Juan Harbor vs. SJH10 REFERENCE

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ANOVA and Comparison of Means

Arcsine Transformed Survival

----- Test=Mysid -----

The GLM Procedure

Class Level Information

Class	Levels	Values
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Treatment	4	SJH10 A-COMP SJH10 B-COMP SJH10 REFERENCE SJH11 PS-COMP
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Number of Observations Read	20
Number of Observations Used	20

Analysis of Survival Data for San Juan Harbor vs. SJH10 REFERENCE  
 ANOVA and Comparison of Means  
 Arcsine Transformed Survival

15

----- Test=Mysid -----

The GLM Procedure

Dependent Variable: arcsurv

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	3	0.14505621	0.04835207	3.42	0.0428
Error	16	0.22607282	0.01412955		
Corrected Total	19	0.37112903			

R-Square	Coeff Var	Root MSE	arcsurv Mean
0.390851	9.383285	0.118868	1.266804

Source	DF	Type I SS	Mean Square	F Value	Pr > F
Treatment	3	0.14505621	0.04835207	3.42	0.0428

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Treatment	3	0.14505621	0.04835207	3.42	0.0428

Analysis of Survival Data for San Juan Harbor vs. SJH10 REFERENCE  
ANOVA and Comparison of Means  
Arcsine Transformed Survival

16

----- Test=Mysid -----

The GLM Procedure

Dunnett's One-tailed t Tests for arcsurv

NOTE: This test controls the Type I experimentwise error for comparisons of all treatments against a control.

Alpha	0.05
Error Degrees of Freedom	16
Error Mean Square	0.01413
Critical Value of Dunnett's t	2.22712
Minimum Significant Difference	0.1674

Comparisons significant at the 0.05 level are indicated by \*\*\*.

Treatment Comparison		Difference		
		Between Means	Simultaneous 95% Confidence Limits	
SJH10 B-COMP	- SJH10 REFERENCE	-0.10032	-Infinity	0.06711
SJH10 A-COMP	- SJH10 REFERENCE	-0.14795	-Infinity	0.01948
SJH11 PS-COMP	- SJH10 REFERENCE	-0.23596	-Infinity	-0.06853 ***